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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/841,318	04/30/97	HATAKEYAMA	K 1259-0191P-S

002292 WM02/0329
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ART UNIT	**PAPER NUMBER**
2612	21

DATE MAILED: 03/29/01

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 21

Application Number: 08/841,318
Filing Date: April 30,1997
Appellant(s): Kouki Hatakeyama

A METHOD FOR CONTROLLING THE DISPLAY MODE AND RECORDING MODE OF AN ELECTRONIC STILL CAMERA

For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed 12/28/00.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1,2 AND 5 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

Appellant's brief includes a statement that claim 7 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

Appellant's brief includes a statement that claim 9 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

Appellant's brief includes a statement that claims 3 AND 6 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

Appellant's brief includes a statement that claim 4 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

5,847,756	IURA ET AL	12-1998
4,837,628	SASAKI	6-1989
4,151,553	SUGIHARA	4-1979

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iura et al (US 5,847, 756) in view of Sasaki (US 4,837,628) further in view of Sugihara (US 4,054,915).

Iura discloses a color video camera (see figures 2 and 3) with motion and still modes of operation with electronic display of motion and still pictures (depression of a shutter button : col. 12, lines 1-18) where a motion picture is interlaced two line additive scanned image data and a still picture is also formed by interlace scanning where each field output of all even lines and all the odd lines form the still image data (one frame; col. 9, lines 1-51). Iura also discloses the still image data level is dependent upon the motion image data in the preceding motion image period by setting the exposure amount for the still image data such that data amount can be from 1.5 to 3 time as much as the motion image data amount (col. 4, lines 42-62 and col. 5, lines 5-15 and col. 14, lines 7-19). As seen in figure 10, the still image mode takes at least 1.5 times as long as the movie mode(see col. 14).Since the Iura system is configured to collect charge in the still image mode that is 1.5 to 3 times the amount in the movie mode, then clearly the system is capable of doubling the exposure. Since extending exposure time, widening or closing the iris, increasing or decreasing the gain are all obvious variation of a way to change the signal level to any one of ordinary skill in the art, it would have been obvious to change exposure time by doubling the exposure time to change the amount of image data /signal level.. Iura fails to specifically discloses the claimed color filter arrangement, interlaced "field shifting" additive readout, and outputting all pixel data in line sequential scanning. However, a motion and still mode color camera which records still images and implements an art equivalent to line sequential scanning is well known in the art as taught by Sasaki.

In the same field of endeavor, Sasaki discloses upon a shutter release operation the still image is recorded (see abstract and col. 4, lines 62-64), and Sasaki reads out all the pixel signal in the still image mode by driving an interline transfer CCD to output each pixel in the array. This driving is equivalent to sequential scanning of each line. Thus it would have been obvious to one of ordinary skill in the art that at the time the invention was made to modify Iura, as taught by Sasaki, such that a motion/still mode camera can store selected still image from the motion sequence in response to the user's selective depression of the shutter button (user likes a certain moment/frame of data in the image data). Additionally, Iura and Sasaki teach providing a high quality still image by using all the image data in the array but outputs the data using different driving methods and Sasaki teaches that driving a CCD image sensor to sequentially output charges is common to electronic cameras (col. 6,lines 44-46) ; and it would appear to be obvious to any one of ordinary skill in the art that either field readouts or line sequential scanning of all pixel charges would produce a quality still image, and the inclusion of either method is matter of design choice.

Iura and Sasaki, as stated above, disclose color imaging systems. However, neither teach using a stripe color filter arrangement and interlaced claimed field shifting method. Although, it is well known in the art to include these features as taught by Sugihara.

Sugihara discloses a color camera which incorporates a column stripe color filter (see figure 3). Sugihara also discloses several interlace methods used in color cameras. One method comprises averaging signals of two adjacent lines of the same color during an even field (col. 9,

lines 1-14) . Another method comprises a two line additive readout which uses the same pair of lines each field (col. 10, lines 49-67), and an interlace method, where different lines are added in each field (col. 8, lines 1-10) which is the claimed method. Thus, it would have been obvious to one of ordinary skill in the art to modify, Iura and Sasaki to use a stripe color filter, as taught by Sugihara, since such processing of color signals from column stripe filters is available to color cameras and provides a good resolution image (see col. 2,lines 40-42). It would have been further, obvious to implement the claimed interlace method taught by Sugihara, in the systems of Iura and Sasaki, as it does not require any significant upgrade to processing circuitry since clocking structure is already present in electronic cameras with solid state sensors and is an improved interlaced color method (see Sasaki col. 2,lines 47-53 and col. 3,lines 65-68 and col. 4,lines 1-5), as taught by Sugihara. Therefore, it would also not require a significant upgrade in the color signal processing circuitry and requires only routine skill in the art to implement a color imaging system incorporating a stripe filter to output a picture with good resolution.

As for claim 2, see Examiners notes in claim 1.

As for claim 3, see Examiner notes in claim 2. Addition, Iura range is from 1.5 to 3 times the amount of charge in the exposure (see cited columns in claim 1).

As for claim 4, Iura disclose changing the exposure in an embodiment. Iura also teaches that when image data level is to be changed, the gain of an amplifier and/or the exposure time is adjusted(col. 3, lines 10-15). Thus it would have been obvious to one of ordinary skill in the art ,

that instead of doubling the exposure time, the gain of the amplifier for the color signals could be doubled to increase the signal.

As for claim 5, see Examiner notes in claim 1. In addition, Iura discloses an embodiment were the motion image charge storage time is inherently updated because the CCD has an electronic shutter component (col. 15, lines 15-45 and col. 17, lines 1-15).

As for claim 6, see Examiner's notes in claim 5. In addition, Iura gives an example in col. 15, the amount of exposure of the still is three times as large. Again, extending exposure time, widening or closing the iris, increasing or decreasing the gain are all obvious variations of a way to change the signal level to any one of ordinary skill in the art. Thus, the exposure range is 1.5 to three times as large which means it could be twice as large.

Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iura (US 5,847,756).

As for claim 7, Iura discloses a color video camera (see figures 2 and 3) with motion and still modes of operation with electronic display of motion and still pictures (depression of a shutter button : col. 12, lines 1-18) where a motion picture is interlaced two line additive scanned image data and a still picture also represent a form of interlace scanning where each field output of all even lines and all the odd line forms the still image data (one frame; col. 9, lines 1-51). Iura also discloses the still image data level is dependent upon the motion image data in the preceding motion image period by setting the exposure amount for the still image data to be from 1.5 to 3 time as large as the motion image exposure amount (see figure 9; col. 4, lines 42-62 and col. 5,

lines 5-15 and col. 14, lines 7-19) which can allow the luminance and balance of recorded still data to be set in the same range. Again, extending exposure time, widening or closing the iris, increasing or decreasing the gain are all obvious variations of a way to change the signal level to any one of ordinary skill in the art.

The implementation of the exposure time is done by cooperation of the microcomputer which stores various data including electronic shutter control data. The microcomputer sends shutter control signals to the electronic shutter control circuit. Although not specifically disclosed by Iura, it would have been matter of common sense, that a storage time calculated/ determined (col. 20, lines 1-16) by the last electronic shutter signal and sent by way of a control signal to the shutter control circuit to the CCD is held/stored/memorized (i.e. in a memory) by the microcomputer.

As for claim 9, Iura discloses a color video camera (see figures 2 and 3) with motion and still modes of operation with electronic display of motion and still pictures (depression of a shutter button; col. 12, lines 1-18) where a motion picture is interlaced two line additive scanned image data and a still picture is formed by an interlace scanning where each field output of all even lines and all the odd lines forms the still image data (one frame; col. 9, lines 1-51). Iura also discloses the still image data level is dependent upon the motion image data in the preceding motion image period by setting the exposure amount for the still image data to be from 1.5 to 3 time as large as the motion image exposure amount (col. 4, lines 42-62 and col. 5, lines 5-15 and col. 14, lines 7-19) which can allows the luminance and balance of recorded still data to be set in the same range.

Although, Iura disclose changing the exposure amount in an embodiment. Iura also teaches that when image data level is to be changed, the gain of an amplifier and/or the exposure time is adjusted(col. 3, lines 10-15). As discussed above, extending exposure time, widening or closing the iris, increasing or decreasing the gain are all obvious variations of a way to change the signal level to any one of ordinary skill in the art. Thus it would have been obvious to one of ordinary skill in the art , that instead of doubling the exposure time, the gain of the amplifier for the color signals could be doubled to increase the signal.

(11) Response to Argument

Applicant argues the references used under 35 U.S.C. 103(a) fail to establish a prima facia case of obviousness based on a combination of elements disclosed in the prior art as there must be some motivation , suggestion, or teaching of the desirability to making the specific combination that was made by the applicant. In establishing the applicants case for this argument, two recent court decisions were cited as support, Dembiczak and Kotzab. Applicant cited the rejection of claims 1-6 of Iura system in view of the Sasaki system, further in view of Sugihara as an improper motivation, asserting that broad conclusionary statements are not alone evidence. The Examiner further clarified the motivation by citing the evidentiary text to

support the motivation to combine the reference, as Kotzab states that *relevant evidence is to be based on the entirety of the disclosure such as a reasonable mind might accept as adequate support the conclusion* or that *a skilled artisan with no knowledge of the claimed invention , would have selected the proposed combination*. Iura teaches a motion and still video camera with adjustable data levels where the still image is adjustable according to the moving image, as the applicant's invention also teaches. Iura implements this camera using a pixel readout method which is different for each of the motion and still image modes, as does applicant. Sasaki teaches reading all the pixels using a driving method equivalent to sequential scanning, and supports this methodology by asserting that the clockings used to provide the readout method is common to electronic cameras (col. 6,lines 44-46), and Sasaki teaches that a high quality still image is obtained. Thus, the disclosure of Sasaki in its entirety suggests improving motion and still imaging in color camera using readout methods known to electronic cameras . Therefore, a reasonable mind would clearly accept this teaching as providing adequate support for modifying Iura to include the driving method of Sasaki for still imaging in a color camera with motion and still image mode, at the time the invention was made, as it also provides a good quality image. Further, Iura shows an image sensor with complementary color filters which are processed to provide a standard NTSC signal. Sasaki used primary color filters. A motion/ still camera with an image sensor using primary color or complementary colors is obviously known in the art, and that a reasonable mind may accept such is clearly illustrated by Iura and Sasaki. Further, Sugihara teaches an improved color image sensor which used a

striped color filter (col. 2, lines 40-53). The use of a striped filter only requires a particular programing of the driving structure of the image sensor. Thus, one of ordinary skill in the art would have considered the context of the teachings of the entire reference of Sugihara and found evidence of adequate support for the conclusion that Iura and Sasaki could be modified, as taught by Sugihara, to provide an improved color image sensor since they both implement color imaging using solid state image sensors with color filters.

Applicant also argues the claims require that each pixel in the even and odd adjacent scanning line be vertically aligned within the same color separation filter , and this feature is not taught or suggested by Iura, Sasaki or Sugihara. However, the Examiner asserts that color filters must be vertically aligned such that each covers a particular pixel in scanning line. Further, Sugihara clearly show on the front page and figure 3, an arrangement where the color filters are vertically aligned within the same color separation filter- a stripe filter arrangement.

Applicant also argues that the claim preambles of claims 1 and 5 have been ignored by the Examiner in respect to the scanning lines of individual pixels intersected by three vertically adjacent color separation filters forming columns so that adjacent scanning lines within a particular color filter detect the same color. The Examiner did not ignore the preamble. As discussed above, Sugihara clearly teaches an image sensor with such an arrangement of color filters in adjacent scanning lines , see figure 3.

Applicant also argues that charge storage time is not charge amount. The Examiner agrees and has further clarified the Examiners stance in the rejection. Iura clearly teaches to

adjust the exposure of the image sensor such that the motion and still image data amount is controlled in relation to one another. The still image data may be 1.5 to 3 times the amount in the movie mode. As one of ordinary skill in the art knows, the amount of data is directly effected by changing the gain or iris or shutter or charge storage time. Iura increases the still image data exposure amount in a range from 1.5 to 3 times. Further, such amount could be changed by changing any one of the previously stated factors. Therefore, it would have been obvious to one of ordinary skill in the art to double the exposure time to in order to double the data in the still imaging mode, since exposure time changing is equivalent to changing an iris, gain or shutter to effectively control the output signal level in an imaging period.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

AMH Andrew Christenson
March 24, 2001

Wendy Garber(SPE)

Any response to this action should be mailed to:
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Washington, D.C. 20231

or faxed to:
(703) 308-6306, (for formal communications intended for entry)

Or:
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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).